2003 Annual Index
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JANUARY

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Editorial—LEAVE ROOM FOR CREATIVITY—Dr. Charles F. Kennel and Dr. Robert Pinkel

Soapbox—SCIENCE AND MARINE POLICY—Prof. Richard Hildreth and M. Casey Jarman

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RAdm. Richard West USN (ret.), President, Consortium for Oceanographic Research and Education

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VAdm. Conrad C. Lautenbacher Jr., Under Secretary of Commerce for Oceans and Atmosphere, Administrator, National Oceanic and Atmospheric Administration

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Congressman Sam Farr (D-California), Co-chair of the House Oceans Caucus, U.S. House of Representatives

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Gordon I. Peterson, Integrated Deepwater System, U.S. Coast Guard

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Susanne Pagano, Houston, Texas

THE OCEANS: TO PROTECT AND TO PLOW
Dr. Rita Colwell, Director, National Science Foundation

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Capt. William G. Schubert, Maritime Administrator, Maritime Administration, Department of Transportation

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Senator Olympia J. Snowe (R-Maine), Chair of the Senate Commerce Subcommittee on Oceans and Fisheries, U.S. Senate

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Kathryn Ebner, NDRSMP Sponsor Representative, U.S. Coast Guard Office of Search and Rescue

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Christine Todd Whitman, Administrator, U.S. Environmental Protection Agency

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Lt. Gen. Robert Flowers, Commander, U.S. Army Corps of Engineers

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Capt. Timothy McGee, Assistant Chief of Naval Research, Office of Naval Research, U.S. Navy

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Congressman Don Young (R-Alaska), Chair of the House Transportation and Infrastructure Committee, U.S. House of Representatives

FISHERIES & AQUACULTURE: WILL AMERICANS BE PRODUCERS OR CONSUMERS?
Rick Martin, Publisher, *Commercial Fisheries News* and *Fish Farming News*

FIRING LINE REPORT: NEW OPPORTUNITIES IN 2003
Michele Umansky, Assistant Editor

TRANSPORT OF UNDERWATER IMAGERY USING ACOUSTIC COMMUNICATIONS
Dale Green (Benthos Inc.) explains how

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TRANSPORT OF UNDERWATER IMAGERY USING ACOUSTIC COMMUNICATIONS
Dale Green (Benthos Inc.) explains how

advanced acoustic communications modems permit reliable telemetry of large data files across difficult channels.

OCEANS 2002—Conference Report

POLREC: A FULLY AUTOMATED SYSTEM FOR POLLUTION REMOVAL

Hans van Rooij (SMIT Salvage BV) examines this diverless solution for the subsea pump-out of environmental threats from wrecks.

FEBRUARY

Cover—Diver participating in the mooring of an oceanographic buoy equipped with a Sea-Bird SBE16 plus multi-parameter sensor recorder (C, T, fluorometer, dissolved oxygen, turbidimeter and pH), installed in the Spanish Mediterranean at Mar Menor, Murcia. This fully equipped monitoring buoy uses real-time GSM telemetry and also has atmospheric and nutrient sensors onboard. It is part of an ongoing monitoring project, led by the local government environmental agency, CIDA of Murcia, and is being integrated by EMS Systems into their current atmospheric monitoring network with data online.

Editorial—HAVE YOU HUGGED YOUR SENSOR DEVELOPER TODAY?—Marcia McNutt

Soapbox—COASTAL AWARENESS AND PREPAREDNESS—Lt. Col. C. Reid Nichols

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OPTODES TO MEASURE OXYGEN IN THE AQUATIC ENVIRONMENT

Dr. Anders Tengberg (Göteborg University), Jostein Hovdenes (Aanderaa Instruments A/S), Dennis Barranger, Olivier Brocandel (Nereides), Dr. Robert Diaz (Virginia Institute of Marine Science), Dr. Juha Sarkkula (Finnish Environment Institute), Dr. Christian Huber and Dr. Achim Stangelmayer (Precision Sensing GmbH) investigate absolute oxygen concentrations with high precision without repetitive calibrations.

OHMSETT: THE NATIONAL OIL SPILL RESPONSE TEST FACILITY

Joseph V. Mullin and James Lane (Minerals Management Service) describe a world-class center for oil spill response research, testing and training.

THE EVOLUTION OF A COASTAL MOORING SYSTEM

R. Cole, Dr. R. Weisberg, J. Donovan, C. Merz, R. Russell, V. Subramanian and Dr. M. Luther (University of South Florida) examine how a simple current meter mooring is transformed into a complete 'air-sea interaction' monitoring system in the Gulf of Mexico.

U.S. HYDROGRAPHIC CONFERENCE 2003—Conference Preview

THE STREAMING DATA MANAGEMENT CHALLENGE

Kim Wallace and Keith Shepherd (Canadian Scientific Submersible Facility) detail the integrating and logging multiple channels of real-time data from various sources in a flexible and familiar environment.

MWAVES DIRECTIONAL WAVE SPECTRA SOFTWARE

Archie T. Morrison III (Nobska Development Corp.) calculates directional wave spectra from MAVS-3 triplet measurements.

PANDA: POP-UP AMBIENT NOISE DATA ACQUISITION SYSTEM

Koay Teong Beng, Dr. John R. Potter, Dr. Pallayil Venugopalan and Tan Eng Teck (National University of Singapore) introduce a rapidly deployable, self-recovering shallow water acquisition platform.

THE SMD UNIVERSAL HANDLING WINCH

Jason Riby and Ralph Manchester (Soil Machine Dynamics Ltd.) develop a novel capstan capable of the deployment and recovery of rope, chain and jointed products.

MARCH

Cover—Single-beam profiles from a Dutch sailing channel visualized and processed in CFLOOR. The survey data are modeled and then cut with a theoretical profile for the channel. The difference model between the surveyed and theoretical terrains, and also the area to dredge, is calculated and visualized.

Editorial—ATLANTIC TSUNAMI WARNINGS ARE NEEDED—Dr. George A. Maul

Soapbox—WHO'S GUARDING YOUR PORTS?—Kurt J. Nagle

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GALILEO: A SATELLITE NAVIGATION SYSTEM FOR THE WORLD

Heinz Hilbrecht (European Commission) examines how Europe's initiative will benefit professional and private users worldwide.

MAPPING FOR DREDGING PORTS AND HARBOURS

Tore Sannes (Roxar Software Solutions AS) demonstrates terrain modeling, mapping and volumetrics using CFLOOR software.

FALMOUTH SCIENTIFIC INC.—Company Profile

A SEA CHANGE FOR THE UNITED STATES NAVY

Rdml. Thomas J. Wilson III discusses the transformation from paper to electronic nautical charts.

ARC INDUSTRIES INC.—Company Brief

SITING AND DESIGN CONSIDERATIONS FOR MARINE TERMINALS

Jeffrey G. Shelden and Scott C. Butler (Moffatt & Nichol Engineers) research data collection and study requirements for an optimal configuration solution.

SHIP MANEUVERING: THE PAST, THE PRESENT AND THE FUTURE

Roger Skjetne (Norwegian University of Science and Technology) explains how vessel control, helicopter landings and ROV operations in extreme weather spur further applications of the developed control theory.

FROM SHIPS TO SHORES TO SATELLITE IMAGES

Mary Jo Wagner (Freelance Writer) describes how radar satellite imagery helps fishery authorities see beyond the horizon to detect the undetected.

GIS-BASED TOOLS IN SUPPORT OF DREDGING OPERATIONS

Eoin Howlett (Applied Science Assoc.) discusses numerical models used in support of dredging and dredge material disposal operations.

GPS FOR MARITIME TRANSPONDERS: THE STANDARDS VS. MARKET FORCES

George Gillow, Paul Geiser and Don English (ARINC Engineering Services LLC) explain how lower cost and higher performance technologies will outpace the standards.

AUV MULTI-TECHNIQUE SURVEYING OF SUBMARINE FRESHWATER SEEPS

Dr. Eberhard J. Sauter, Prof. Michael Schlüter (Alfred Wegener Institute for Polar and Marine Research), Patrick L. Sedyn, Neil Fraser (De Beers Marine) and Per Fogt (Maridan A/S) outline the high and ultra-high resolution acoustic and CTD mapping of pockmark sites in Eckernförde Bay, in the western Baltic Sea.

APRIL

Cover—Transocean's deepwater semisubmersible *Cajun Express* works in the U.S. Gulf of Mexico with the latest automated pipe-handling and integrated drilling equipment designed to reduce the time for drilling offshore wells. The *Cajun Express* is a fifth-generation rig built to achieve faster penetration rates supported by a Tri-Act derrick in which drillpipe and other tubulars can be put together, used in constructing a well and disassembled simultaneously at different work areas. (Photo courtesy of Transocean Inc., photographer Ken Childress)

Editorial—A STORM OF OUR OWN MAKING—Tom Fry

Soapbox—OVERDUE QUESTIONS ON HOW SUBSIDIZED RESEARCH VESSELS ARE USED—Jim Christmann

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SEISMIC RESERVOIR MONITORING USING STEERABLE STREAMERS

Ola Eiken, Erik Håvarstein, Hans Aronsen and Lars Haakon Nordby (Statoil) demonstrate how Q marine technology steers horizontal and vertical streamers via novel devices.

STRONG COMMODITY PRICES BRIGHTEN OIL, GAS MARKET

Susanne Pagano (Freelance Writer) examines how various deepwater projects in the Gulf of Mexico will attract industry interest.

OFFSHORE TECHNOLOGY CONFERENCE 2003—Conference Preview

FISCAL YEAR 2004 FEDERAL BUDGET REQUEST TO CONGRESS

Richard F. Burns (Associate Editor) reviews the proposed budget for NOAA, NASA, DoD, Navy, MARAD, EPA, USCG, NSF, Army COE, USGS and MMS.

RESULTS OF A MOORED PROFILING PLATFORM TEST

Christoph Waldmann and Markus Bergenthal (MARUM, University of Bremen) discuss new solutions for long-term ocean monitoring.

UNDERWATER INTERVENTION 2003—Conference Report

PROTOTYPE INSTRUMENTATION UNDER THE MICROSCOPE

Lance McBride (Monterey Bay Aquarium Research Institute) explains how to prototype with fine pitch and BGA SMT in oceanic engineering.

SEAWATER VELOCITY VARIATIONS AND TIME-LAPSE SEISMIC

Alexandre Bertrand (Heriot-Watt Institute of Petroleum Engineering) identifies the impact on seismic reservoir monitoring with deepwater permanent installations.

SUBMARINE PIPELINE ROUTING THROUGH AN INTEGRATED APPROACH

Ranjit Rath, C.C. Babu, S. Malkani and Dr. V.V. Reddy (Engineers India Ltd.) examine how real-time digital data acquisition and onboard data processing helps on-site route assessment and selection.

MAY

Cover—The Surface Ship Torpedo Defense (SSTD) system, under development by Ultra

Electronics Maritime Systems (Dartmouth, Nova Scotia, Canada). The SSTD towed array has a high-speed ATM-SONET network backbone, supplied by Planning Systems Inc. (Long Beach, Mississippi), that links the hydrophone sensors to the shipboard processing systems.

Editorial—SEAWATER RESOURCES TO FIGHT HYDROLOGICAL PROVERTY—Toshitsugu Sakou

Soapbox—ROV COMPETION: PREPARING STUDENTS FOR CAREERS IN THE OCEAN INDUSTRY—Jill Zande

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NODES AND LINKS FOR UNDERSEA NETWORKS

John Walrod (Planning Systems Inc.) demonstrates how network-centric architectures and low-power nodes enable modern systems.

SEAMOBILE SUBMERSIBLES: A NEW TOOL FOR THE SUBSEA INDUSTRY

Charles Kohnen (SEAmagine Hydrospace Corp.) describes a technology that brings experts to the underwater worksite for increased safety and productivity.

OCEANOLOGY INTERNATIONAL AMERICAS 2003—Conference Preview

TECHNOLOGY ENABLES FIRST SHALLOW-WATER VIDEO TRANSMISSIONS

Jerry Fireman (Structured Information) reveals how high-speed, simultaneous multi-channel sampling is key to real-time video in shallow water.

NATIONAL OCEAN INDUSTRIES ASSOCIATION ANNUAL MEETING—Conference Report

MANAGING OCEANOGRAPHIC DATA TO SUPPORT MULTIPLE REQUIREMENTS

Wade Ladner (Naval Oceanographic Office) and Jeff Moseley (SPAWAR Information Technology Center) outline a conceptual design for managing large heterogeneous data sets to optimize geospatial product development.

COASTAL ZONE 2003—Conference Preview

ADCPs IN ACTION II—Conference Brief

OCEANOGRAPHIC HIGH-THROUGHPUT COMMUNICATIONS SYSTEM

Timothy N. Rosario and James E. Hardiman (Benthos Inc.) introduce a communications system to fit the ever-increasing demand for high data transmission rates.

DATA QUALITY MONITORING USING EMBEDDED INTELLIGENCE

Michael Szabados, Thomas Bethem and Michael Evans (NOAA's National Ocean Service) explain the use of real-time case-based and rule-based reasoning methodologies to monitor the quality of environmental data.

JUNE

Cover—RESON's SeaBat 8125 Multibeam Echosounder collected this image of the USS *Susan B. Anthony* (AP-72), a World War II transport ship, resting offshore Omaha Beach. Sunk by a mine explosion during the D-Day invasions, several features are still easily identified in the bathymetry data including the main mast, rigging and bow gun. This visualization was generated by Helical Systems HHViewer software.

Editorial—ACADEMIC FLEET RENEWAL—Two Years Later—Larry Atkinson

Soapbox—TEACHING A PHYSICAL OCEANOGRAPHY COURSE THAT IS WORTH TAKING—Louis E. Keiner

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ANALYZING ACOUSTIC IMAGERY IN 3D: A CASE STUDY

A.R. Haas (Northrop Grumman IT), S. Ziegler (Mississippi State University) and P.P. Gruzinskas (Naval Oceanographic Office) examine how to reconstruct the undersea battlespace with a seafloor textured with acoustic response.

NEW TOOLS FOR MONITORING COASTAL CONTAMINANT MIGRATION

D. Bart Chadwick, Adam Gordon (SPAWAR Systems Center), Jon Groves (Computer Sciences Corp.), Chris Smith (Cornell Cooperative Extension Marine Program), Ronald Paulsen (Cornell University) and Bryan Harre (Naval Facilities Engineering Service Center) outline a program to develop advanced assessment technologies for groundwater-surface water exchange.

APPLICATION OF MULTIBEAM: SURVEYING THE D-DAY LANDING

James Schmidt (Naval Historical Center), Chris Malzone (RESON Inc.), Dr. Larry Mayer and Dr. Brian Calder (Center for Coastal and Ocean Mapping/Joint Hydrographic Center) discuss how marine archeologists turned to high-resolution multibeam systems to investigate Operation Neptune.

UNITED STATES HYDROGRAPHIC CONFERENCE 2003—Conference Report

OCEANOGRAPHIC RESEARCH VESSEL SCIENCE MISSION REQUIREMENTS

Annette DeSilva and Mike Prince (University-National Oceanographic Laboratory System) explain how establishing SMRs is the first step in research ship design and provides the foundation for academic fleet renewal.

A TECHNIQUE FOR BURIED MINES DETECTION AND CLASSIFICATION

Dr. Stéphane Guyonic (Groupe d'Etudes Sous-Marines de l'Atlantique) describes the application of a data acquisition tool and its subsequent process.

ST. LAWRENCE RIVER MARINE SURVEY VIA GLOBAL POSITIONING SYSTEM

René Jaouen (Thales Navigation Inc.) talks about abandoning the use of tide gauges and the Canadian Coast Guard adopting an all-GPS technique.

A SEA CHANGE FOR AMERICA'S MARITIME FORCES TESTING

Ken Balbuena (Commander Operational Test and Evaluation Force) reviews maritime dominance and the impact of America's sea powers uniting for joint operational testing.

JULY

Cover—The bottom unit of the NESTOR telescope, deployed at a depth of 4,000 meters in the Ionian Sea, southwest Peleponnese, Greece, with the attached environmental sensors and an electro-optical deep-sea cable, is lowered into the sea. The bend restrictor and the mechanical termination of the cable, the mass anchor (railway heel) and an ocean bottom seismometer are clearly seen. The oversized feet keep the bottom unit from sinking into the clay sediment of the sea bottom.

Editorial—THE WAY AHEAD—Dr. Paul F. Moersdorf

Soapbox—A WAKE-UP CALL FOR CURRICULUM PLANNERS—Dr. Ben J. Korgen

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DEEP-SEA STATION CONNECTED BY CABLE TO SHORE

E.G. Anassontzis (University of Athens) and P. Koske (University of Kiel) describe a multidisciplinary station with payload exchange, power supply and data transfer in real-time via electro-optical cable.

THE STATE OF THE ART IN WAVE ENERGY CONVERSION

Mirko Previsic (SeaVolt Technologies Inc.) explains how ocean wave energy conversion is on the verge of becoming cost-competitive with other sources of renewable energy.

ROBUST OPEN-OCEAN AUV LAUNCH AND RECOVERY SYSTEMS

Jim Walton (Space and Naval Warfare Systems Center, San Diego) examines how simple systems have proven reliable and cost-effective, logging hundreds of safe AUV launches and recoveries.

REQUIREMENTS FOR QUALIFIED SUBMARINE CABLE TECHNICIANS

Martin Greska (Oceaneering International Inc.) discusses how to find the best qualified personnel available in the field and retain them.

CALIFORNIA'S ENERGY FUTURE AND COLD OCEAN WATER

Jack R. Davidson (Sea Grant College Program University of Hawaii) describes cultivating technology to provide coasts with an environmentally friendly substitute for electricity for air conditioning and cooling.

PIPELAY SUPPORT SYSTEM: A NEW VISUALISATION TOOL

Steve Sansom (Sonar Research & Development Ltd.) explains how creative sonar technology can provide catenary and touchdown information, and an extra dimension to real-time monitoring.

ARCTIC OCEAN RESEARCH: PROGRESS AND REQUIREMENTS

G.B. Newton Jr. (Arctic Research Commission) explores how the world's most poorly understood ocean is rapidly changing and how its global relevance is growing.

REPEL BOARDERS! LOW-TECH WARFARE IN A HIGH-TECH AGE

Capt. Daniel S. Schwartz (University of Washington) reviews security considerations for oceanographic research operations in today's high-threat environment.

THE LINK PROJECT: A NOAA AND NASA PARTNERSHIP

Andrew Shepard (University of North Carolina) and Andrea McCurdy (enterACKed) explain how the two administrations are working to promote ocean and space research and exploration through technology innovation.

AUGUST

Cover—*Umptysquatch-1*, the Sussex Technical High School entry from Sparta, New Jersey, and winner of the Compass Publications-sponsored Best Design Outline Award, launches to enter the seventh International Submarine Races at the David Taylor Model Basin test tank. (Photo courtesy of Mariby Johns)

Editorial—TECHNOLOGY CAN WEAR A WHITE HAT—Dr. Donald F. Boesch

Soapbox—FISH-PLANET EFFLUENTS AND THE

EMPATHY-BASED APPROACH—Dr. Michael Chadwick

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THE FUTURE OF CLIMATE OBSERVATIONS IN THE GLOBAL OCEAN
Dr. Dean Roemmich and Dr. John Gould (Scripps Institution of Oceanography) look at the benefits that can come from international commitments for the collection of high-quality observations.

RESEARCH AND STUDIES ON INTERTIDAL *MICROMONOSPORA*
Yaojian Huang, Zhonghui Zheng, Dr. Wenjin Su, Dr. Jianfeng Wang and Dr. Yufen Zhau (Xiamen University) offer insight into a new and promising marine source for antimicrobial compounds.

A NEW ERA IN INFORMATION MANAGEMENT FOR THE COASTAL ZONE
Mark Hannam and Dr. Mike Osborne (Metoc plc) show how spatial information/decision support systems are coming of age as a result of new technology and stakeholder cooperation.

OCEANS 2003 MTS/IEEE CONFERENCE AND EXHIBITION—Conference Preview

SEVENTH INTERNATIONAL SUBMARINE RACES
Michele Umansky (Assistant Editor) reports on teams old and new competing as speed is tested and innovative designs are displayed for all to see.

UNITED STATES MARITIME HOMELAND SECURITY
Richard Burns (Associate Editor) reveals how protecting commerce has global effects which include inspections at foreign ports and a focus on shipping containers.

SCIENCE UNDER SAIL AT SEA EDUCATION ASSOCIATION—Association Brief

DATA MANAGEMENT TECHNIQUES FOR NEOCO
Margaret McManus, John Largier, Eufemia Palomino, Lauren Wilkinson and Libe Washburn (University of California) discuss the Network for Environmental Observations of the Coastal Oceans.

A PORTABLE, ELECTRONIC-FOCUSING SONAR SYSTEM FOR AUVS
Dr. Alice M. Chiang, Dr. Steven R. Broadstone and John M. Impagliazzo (Teratech Corp.) explain the technology and process for 3D sonar imaging using a 2D sparse array.

DIRECTIONALLY DRILLED BORES FOR REMOTE CABLE LANDINGS
Nate Sinclair, Hugh Thomson (Naval Facilities Engineering Service Center, Port Hueneme, California) and Stanley Black (Ocean Engineer/Consultant) reveal how cable shore landings can bypass the surf zone using lightweight horizontal drilling technology.

SEPTEMBER

Cover—Artist's conception of the current deep ocean drilling technology applied to deep ocean storage (courtesy Michael Skrab, Oceaneering International Inc.—OII). Appreciation is extended to individuals at ONR ANWAP; NRL Stennis; DOE; ATRP Corp.; General Dynamics (AIS); OII; TC International Inc.; the universities of AK, HI, MD; Texas A&M; WHOI; and for advice from the Ocean Commission and CORE.

Editorial—A NEW CENTURY OF SCRIPPS SCIENCE—Dr. Charles F. Kennel

Soapbox—HF RADAR CURRENT VELOCITY UNCERTAINTIES—Dr. Belinda Lipa

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A NATIONAL VERTICAL DATUM TRANSFORMATION TOOL
Dr. Bruce Parker, Dr. Kurt Hess (Coast Survey Development Laboratory), Dr. Dennis Milbert (National Geodetic Survey) and Stephen Gill (NOAA Center for Oceanographic Operational Products and Services) explain why NOAA's National VDatum is critical to a number of important geospatial and coastal oceanographic applications.

NEW PERSPECTIVES IN DEALING WITH MULTIBEAM DATA SETS
Alessandro Dibona (Pangea S.r.l.) describes the Multibeam Manager, a seamless approach to multibeam data sets with no manual editing, huge data set management and a continuous navigation surface.

NON-LINEAR ECHO SOUNDERS FOR HIGH-RES SUB-BOTTOM PROFILING
Jens Wunderlich (Rostock University) and Sabine Müller (Innomar Technologie GmbH) examine the advantages and applications of parametric acoustics for mobile high-resolution echo sounders.

THE OCEAN STORAGE OF NUCLEAR WASTE
Congressman Curt Weldon (R-Pennsylvania) discusses why new approaches to safe and secure storage of nuclear waste require greater examination.

SEG '03 INTERNATIONAL EXPOSITION AND 73rd ANNUAL MEETING—Conference Preview

A GEOPHYSICIST'S VIEW OF THE NANSEN DISCOVERY, GULF OF MEXICO
Dr. Jeff G.-S. Pan (Kerr-McGee Corp.) explains how geophysical technology mitigated risk, increased exploration chance factors and reduced uncertainty in the Nansen Field.

A NEW DEEP-TOWED, MULTI-CHANNEL SEISMIC SYSTEM
Dr. W. T. Wood, Dr. J. F. Gettrust (Naval Research Laboratory) and S. E. Spychalski (High Tech Inc.) reveal why an improved design allows for high-resolution sub-bottom images and sound velocity profiles.

GEOMAR LANDERS AS LONG-TERM DEEP-SEA OBSERVATORIES
Dr. Olaf Pfannkuche and Dr. Peter Linke (GEOMAR Research Center for Marine Geosciences) examine the applications and developments of lander technology in operational oceanography.

OCTOBER

Cover—Hurricane Fabian passing over the Bermuda Testbed Mooring (BTM) on September 5, 2003. The black outline indicates the island of Bermuda, and the red cross shows the location of the mooring. BTM sensors measured surface wind speed and direction, relative humidity, solar radiation, barometric pressure, subsurface currents, temperature, conductivity, bio-optical properties and trace metals. This image was provided by the MODIS Rapid Response Team at NASA GSFC. The buoy image was produced by Frank Spada and Don Peters.

Editorial—SEASAT'S LEGACY—Dr. Richard L. Crout

Soapbox—CRUSE SHIP WASTEWATER MANAGEMENT: ASSESSING TRADEOFFS—Alan J. Mearns

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THE CYPRUS COASTAL OCEAN FORECASTING SYSTEM
Dr. George Zodiatis, Dr. Robin Lardner (Oceanography Centre), Dr. Georgios Georgiou (University of Cyprus), Dr. Encho Demirov, Dr. Nadia Pinardi (Istituto Nazionale di Geofisica e Vulcanologia) and Dr. Giuseppe Manzella (Italian National Agency for New Technology, Energy and the Environment) describe CYCOFOS, a key component in a growing network of European ocean observing systems.

NEW SENSORS MONITOR BIO-OPTICAL/ BIOGEOCHEMICAL OCEAN CHANGES
Tommy Dickey (University of California, Santa Barbara), Casey Moore (WET Labs Inc.) and the O-SCOPE Group explain the NOPP O-SCOPE project, which develops systems for long-term research and monitoring for the oceanographic community.

THE INTEGRATED OCEAN OBSERVING SYSTEM: DISCOVERY AND EDUCATION
RAdm. Richard West, USN (ret.), of the Consortium for Oceanographic Research and Education, discusses ocean and coastal observations to meet national security, climate change, coastal ecosystem and science education needs.

AIRBORNE POLLUTION SURVEILLANCE USING MULTI-SENSOR SYSTEMS
Dr. Oliver Zielinski (OPTIMARE Sensorsysteme AG) examines new sensors and algorithms for improved oil spill detection and polluter identification.

ARGO: AN ARRAY OF FREE-DRIFTING PROFILING FLOATS
Jon Turton (Met Office) looks at the progress towards establishing a global array of 3,000 floats for observing the world's oceans.

CHEMICAL POLLUTION OF COASTAL WATERS AROUND KITAKYUSHU, JAPAN
Dr. Kiwao Kadokami (Kitakyushu City Institute of Environmental Sciences) estimates ecological risk by the combination of simultaneous analysis and quotient method.

REMOVAL OF DROP-OUTS FROM WAVE RECORDS WITH SPLINES
Claudio D. Fassardi (BMT Scientific Marine Services Inc.) and Dr. Robert T. Hudspeth (Oregon State University) reveal a methodology for overcoming a limitation of wave measurements with non-contact gauges.

INTERNET-BASED TELEOPERATION OF AN ROV IN ANTARCTICA
G. Bruzzone, R. Bono, M. Caccia and G. Veruggio (Istituto di Studi sui Sistemi Intelligenti per l'Automazione) show how web surfers can remotely operate an ROV immersed in the Antarctic Sea by means of a simple connection to the Internet.

NOVEMBER

Cover—The Navy's newest and most advanced submarine, Pre-Commissioning Unit (PCU) *Virginia* (SSN 774) moved outdoors for the first time in preparation for her August 16, 2003, christening. (Photo courtesy of Electric Boat) Inset, conceptual drawing of the new *Virginia*-class attack submarine. (Graphic by Ron Stern)
Editorial—UNDERSTANDING THE NAVY'S DIRECTION—RAdm. William G. Timme
Soapbox—ASW, a.k.a. AWFULLY SLOW WARFARE—Stephen M. Reece

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HIGH-SPEED MUNITIONS ADVANCED TEST CAPABILITY
Dr. F. Blackmon, D. Desharnais, J. Feaster, Dr. D. Hughes, Dr. T. Gieseke, S. Forsythe, K. Benjamin, Dr. R. Kuklinski (Naval Undersea Warfare Center, Newport) and Dr. M. Farwell (ITT Industries) outline an optical imaging and tracking system for the Land/Sea Vulnerability Test Capability Project.

DEVELOPMENT PROGRAM: ACTIVE SONAR FOR SECURITY APPLICATIONS
George Boszormeny (C-Tech Ltd.) describes how the use of surveillance sonar for the detection of underwater intruders protects harbors and coastal facilities with high value assets.

OCEANS 2003 MTS/IEEE CONFERENCE AND EXHIBITION—Conference Report

POTENTIAL APPLICATIONS OF OCEAN ACOUSTIC TIME-REVERSAL MIRRORS
Dr. Tuncay Akal, Dr. William A. Kuperman, Dr. William S. Hodgkiss, Dr. Hee-Chun Song, Dr. Geoffrey F. Edelmann, Dr. Seongil Kim, Dr. Philippe Roux (Marine Physical Laboratory, Scripps Institution of Oceanography), Dr. Mark Stevenson, Piero Guerrini and Pier A. Boni (SACLANT Undersea Research Centre) explain the focusing of acoustic energy in shallow water for active sonar and underwater communications.

A DEEP-SUBMERGENCE, VERY LOW-FREQUENCY MULTIPORT TRANSDUCER
Alexander L. Butler and Dr. John L. Butler (Image Acoustics Inc.) discuss a new broadband multiport transducer for long range propagation.

SEAHORSE UUV SHOWS OFF IN 'GIANT SHADOW' FOR THE NAVY
George Lammons (Naval Meteorology and Oceanography Command) shows how Seahorse proves its value to the U.S. Navy's submarine and special operations communities during the 10-day experiment.

IMPROVED SUBSEQUENT BURIAL INSTRUMENTED MINES
Sean Griffin, John Bradley (Omni Technologies Inc.) and Dr. Michael D. Richardson (Naval Research Laboratory) examine how a new instrumented mine continuously monitors burial behavior and near-field processes causing burial.

WALLOPS ISLAND: SHIP SELF-DEFENSE FACILITY
Alan D. Wilson (Freelance Writer) reveals how the value of land-based testing has been proven through successful local programs such as SSDS and Aegis.

A LARGE VOLUME DEEP-OCEAN SAMPLER FOR HYDROTHERMAL FLUIDS
Tor Bjorklund (University of Washington) and Matthew McCarthy (University of California, Santa Cruz) describe a simple, novel design that allows collection of hundreds of liters of uncontaminated fluid with each deployment.

EVOLUTION OF A NEARSHORE COASTAL OBSERVATORY
Oscar Schofield, Robert J. Chant, Josh Kohut and Scott Glenn (Rutgers University) discuss the steps that are being taken toward the establishment of the New Jersey Shelf Observing System.

DECEMBER

Cover—Archaeologist Elizabeth Greene removes an amphora from a sixth-century B.C. shipwreck 140-feet-deep off Tektas Burnu, Turkey. Excavation director George Bass and pilot Jon Council watch the progress of work from *Carolyn*, a submersible built for the Institute of Nautical Archaeology at Texas A&M University by the SEAmagine Hydrospace Corp. of Claremont, California. (Photo by Courtney Platt)
Editorial—OCEANOGRAPHIC INFORMATION SUPERIORITY THROUGH BATTLESPACE CHARACTERIZATION—Capt. Phillip Renaud
Soapbox—FUTURE MANNED HYDROSPACE: STEWARDSHIP OF OUR INDUSTRY—William Kohnen

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DEEPWATER AUV LOGS 25,000 KILOMETERS UNDER THE SEA
Robert A. George, Dr. Jih-Ping Shuy (C & C Technologies Inc.) and Dr. Eric Cauquil (Total) examine technology that provides high-quality remote sensing data for deepwater seabed engineering projects in half the time.

DIGITAL VIDEO FOR THE OFFSHORE OIL AND GAS SECTOR
David E. Ireland (IRIS Technology) questions: Has anarchy in the UKCS given way to apathy within the industry?

USE OF GIBS IN AUVS FOR UNDERWATER ARCHAEOLOGY
Samuel Desset, Robert Damus, James Morash (MIT Sea Grant AUV Lab) and Dr. Camille Bechaz (ACSA) describe a time-saving tracking system that substitutes for LBL navigation systems and enables communication with undersea vehicles.

SCIENTIFIC APPLICATIONS FOR THE ELECTRIC QUEST WROV
Dr. Volker Ratmeyer (MARUM Center for Marine Environmental Sciences) and Richard Gross (Schilling Robotics) explain how Quest facilitates deepwater research from hydrothermal vent fields to polar regions.

THE PRESENT STATUS OF DIVERS WORKING IN THE SEA
Dr. William Phoel (Phoel Associates Inc.) discusses continued advancements to increase safety, efficiency and effectiveness of both shallow and deep diving operations.

UNDERWATER INTERVENTION 2004—Conference Preview

A NEW METHOD FOR MEASURING BEDLOAD THICKNESS
Dr. Paul R. Ogushwitz and Howard L. Ogushwitz (PRO Scientific Consulting) show how feasibility is demonstrated using standing waves in air systems with an acoustic lens and model sediment.

FIELD TESTS OF THE NEW DATAWELL DWR-G GPA WAVE BUOY
J. J. de Vries (Datawell BV), J. Waldron and V. Cunningham (Environmental Protection Agency, Australia) review of how a GPS-based directional waverider achieves one centimeter precision up to 100-second periods anywhere in the ocean.

SAFEGUARDING FINDINGS FROM DEEP-SEA EXPLORATIONS
Linda Toleno (Pioneer Electronics Inc., USA) describes how Harbor Branch Oceanographic Institution harnesses the power of DVD to save valuable research for posterity.

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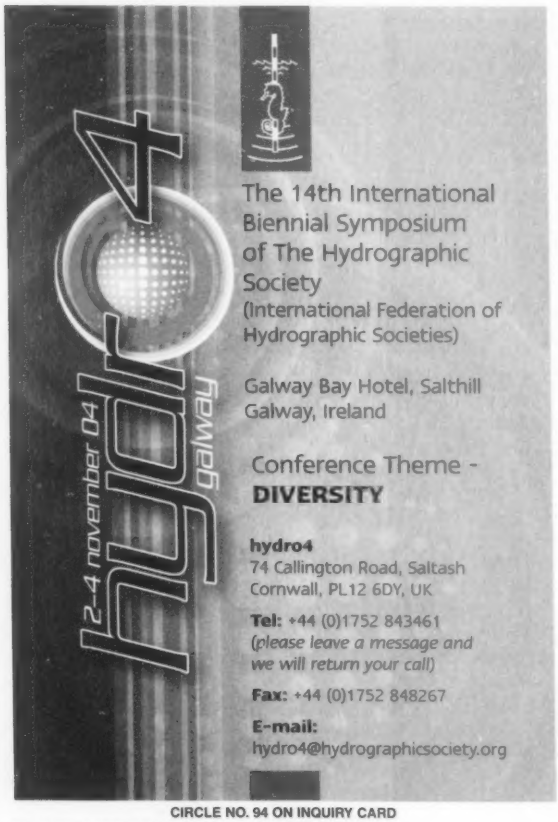
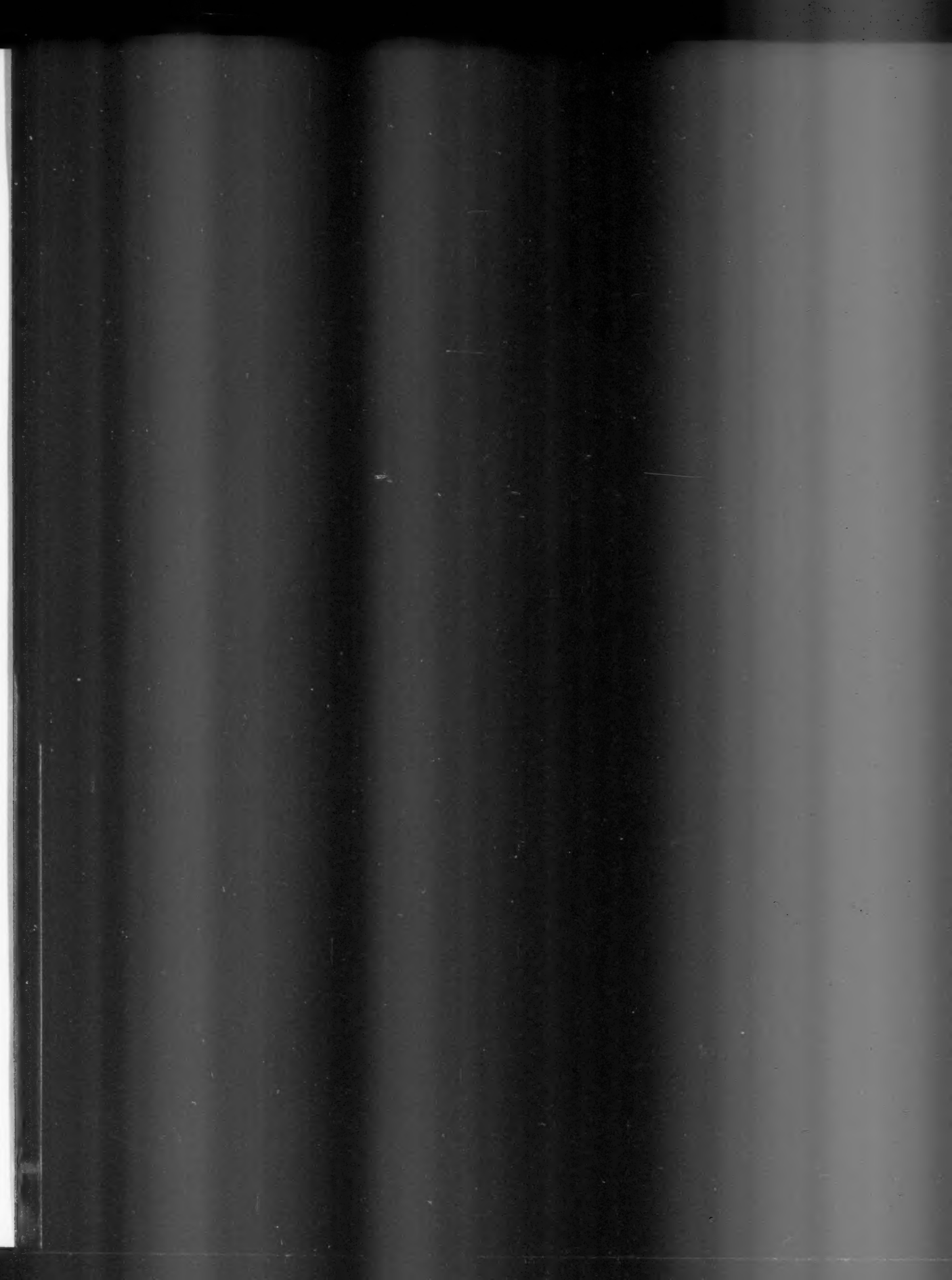
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